

Appl. No. 09/931,342
Amdt. dated February 19, 2004
Reply to Office Action of June 20, 2003

Amendments to the Claims:

Please amend claims 1 through 12 and add claims 13-24.

Listing of Claims:

1. (Currently amended) A method for removing pathogens from biological liquids, said biological liquids containing at least one pharmaceutically active molecule, said method comprising the steps of:

providing a biological liquid, wherein~~whereby~~ pathogens are potentially present, in an apparatus comprising an anode and a cathode and a separation means suitable for separating said pathogens from said pharmaceutically active molecule, said separation means being positioned between said anode and said cathode, and substantially all transmembrane migration of the pathogen or pharmaceutically active molecule is initiated by application of current;

applying current between said anode and said cathode, thereby causing one of said pathogens or said pharmaceutically active molecules to pass said separation means, ~~and,~~

optionally, periodically stopping and reversing said current; and

recovering said pharmaceutically active molecule in a form being essentially free of pathogens.

2. (Currently amended) The method according to claim 1 wherein~~whereby~~ said separation means is a filtration means.

3. (Currently amended) The method according to claim 2 wherein~~whereby~~ said filtration means is an ultrafiltration membrane.

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4. (Currently amended) The method according to claim 2 ~~wherein~~whereby said filtration means is a nanofiltration membrane.

5. (Currently amended) The method according to claim 1 ~~wherein~~whereby said pharmaceutically active molecule is a protein.

6. (Currently amended) The method according to claim 5 ~~wherein~~whereby said protein is a blood protein.

7. (Currently amended) The method according to claim 5 ~~wherein~~whereby said protein is smaller than said pathogen and said separation means allows passing of said protein but prevents passing of said pathogen.

8. (Currently amended) The method according to claim 1 ~~wherein~~whereby said separation means is a series of filters with different separation characteristics.

9. (Currently amended) The method according to claim 8 ~~wherein~~whereby said different filtration characteristics are caused by different cut-off values of the filters in said series of filters.

10. (Currently amended) The method according to claim 1 ~~wherein~~whereby said pathogens are selected from the group consisting of viruses, bacteria, prions, and combinations thereof.

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11. (Currently amended) The method according to claim 9 ~~wherein~~whereby said cut-off values are selected to allow a separation between said pharmaceutically active molecule and aggregate of said molecule.

12. (Currently amended) An apparatus for removing pathogens from biological fluids, said biological fluids containing at least one pharmaceutically active molecule, said apparatus comprising:

a container for uptake of said biological liquid,

an anode, a cathode, and a separation means suitable for separating said pathogens from said pharmaceutically active molecule, said separation means being positioned between said anode and said cathode, and substantially all transmembrane migration of the pathogen or pharmaceutically active molecule is initiated by application of current;

a current supply and means for applying said current between said anode and said cathode.

13. (New) A method for removing pathogens from biological liquids, comprising:

providing a biological liquid, whereby pathogens are potentially present, in an apparatus comprising an anode and a cathode and a separation means suitable for separating pathogens from a pharmaceutically active molecule, the separation means being positioned between the anode and the cathode;

applying current between the anode and cathode, thereby causing one of the pathogens or the pharmaceutically active molecules to pass through the separation means, the separation means

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containing a selective membrane that allows passage of either a pathogen or a pharmaceutically active molecule through the membrane, while preventing the other from entering therethrough; optionally, periodically stopping and reversing the current; and recovering the pharmaceutically active molecule in a form being essentially free of pathogens.

14. (New) The method according to claim 13 whereby the separation means is a filtration means.

15. (New) The method according to claim 14 whereby the filtration means is an ultrafiltration membrane.

16. (New) The method according to claim 14 whereby the filtration means is a nanofiltration membrane.

17. (New) The method according to claim 14 whereby the pharmaceutically active molecule is a protein.

18. (New) The method according to claim 17 whereby the protein is a blood protein.

19. (New) The method according to claim 17 whereby the protein is smaller than the pathogen and the separation means allows passing of the protein but prevents passing of the pathogen.

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20. (New) The method according to claim 13 whereby the separation means is a series of filters with different separation characteristics.

21. (New) The method according to claim 20 whereby the different filtration characteristics are caused by different cut-off values of the filters in the series of filters.

22. (New) The method according to claim 13 whereby the pathogens are selected from the group consisting of viruses, bacteria, prions, and combinations thereof.

23. (New) The method according to claim 21 whereby the cut-off values are selected to allow a separation between the pharmaceutically active molecule and aggregate of the molecule.

24. (New) An apparatus for removing pathogens from biological fluids, the biological fluids containing at least one pharmaceutically active molecule, the apparatus comprising:

a container for uptake of the biological liquid,

an anode, a cathode, and a separation means suitable for separating the pathogen from the pharmaceutically active molecule, the separation means containing a selective membrane that allows passage of either a pathogen or a pharmaceutically active molecule through the membrane, while preventing the other from entering therethrough, and being positioned between the anode and the cathode, and

a current supply and means for applying current between the anode and the cathode.